The Province of Alberta

IN THE MATTER OF "THE NATURAL GAS UTILITIES ACT"

—and—

IN THE MATTER OF an Enquiry into Scheme to be adopted for Gathering, Processing and Transmission of Natural Gas in Turner Valley

G. M. BLACKSTOCK, Esq., K.C., *Chairman*

Dr. E. H. BOOMER, F.C.I.C., *Commissioner*

Session:

CALGARY, Alberta 15th October, 1946.

VOLUME 1

RE PLANT VAPOURS.

I N D E X

E X H I B I T S

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IN THE MATTER OF "The Natural Gas Utilities Act;

AND IN THE MATTER of an application by Madison Natural Gas Company Limited respecting plant vapours.

Hearing of the above application before G. M. Blackstock, Esq.,K.C., Chairman, at the Court House, Calgary, commencing on the 15th day of October, A.D 1946, at the hour of 10 A.M.

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THE CHAIRMAN: You are for Madison, Mr.Chambers?

MR.CHAMBERS: Yes sir, and I am appearing also for Royalite.

MR.EGBERT: I am appearing for the Standard Chemical Company Limited.

MR. McDONALD: The Gas Producers' Committee of the A.P.A., sir.

MR. BROWNIE: I am the sole representative of the Canadian Western, Mr. Blackstock.

MR. J. E. BARBER: I am representing J. J. Barber, and the Barber Engineering & Supply Limited.

MR. C. W. COOTE: I am representing the British American Oil Company.

MR. A. BAILEY: I am representing the Conservation Board.

THE CHAIRMAN: Gentlemen, we are here this morning to hear, or to begin the hearing of an application made to The Natural Gas Utilities Board by Madison Natural Gas Company respecting some disposition of that which I know by the name

of "plant vapours". There is a flare at the end of the absorption plant but there is one at the Madison that we have to deal with. The Board for some time has been of the opinion that there is a sufficient volume of plant vapours being flared that warranted some investigation as to the possible utilization of those vapours, and following discussions with the Madison Company in that regard, they have made this application. You all have a copy of it. I do not want to read it at this time.

There are several questions that arise, and the first one, to my mind, is whether it is economically feasible to recompress these plant vapours and deliver them to the scrubbing plant for ultimate delivery to the Canadian Western system. Then there is the question as to the alternative uses which might be made of these plant vapours. As I understand it the composition of them is methane, propane and ethane, and I know, and we all know, I think, that in recent months at least it would appear as if there ought to be an available market for propane.

The application before the Board at the moment is by Madison for leave to instal the necessary equipment to recompress these vapours and finally deliver them to the Canadian Western for their distribution system. Any other alternative method that might be available, or regarding which anyone wishes to make a submission, will, of course, be heard during the course of Madison's application.

Now Mr. Steer telephoned me, I think it was on Friday, and advised me that, acting for the Canadian Western, some problems arose in his mind which he thought affected the position of the Canadian Western and he asked me

not to proceed with the Hearing this morning. He was called to Ottawa. I, of course, am going to accede to his request. It would be improper if I did not. But we might be able to go some little distance today without involving Mr. Steer's position or prejudice him at all in the slightest degree. It might perhaps be well, Mr. Chambers, if you were to outline your application and then if the others present have anything to say, either with respect to yours or to some alternative, then it will go on the record today and everyone will know what we have done, and we can perhaps be ready to go on with the actual application at a fairly early date.

MR. CHAMBERS: First I probably should file with the Board the affidavits proving service of the application and of the notice which you, Sir, directed to be sent out. For the purposes of the record the affidavits will disclose that service was effected, pursuant to the Board's direction, on the British American Oil Company Limited, British American Gas Utilities Limited, Gas & Oil Refineries Limited, Gas & Oil Products Limited, Canadian Western Natural Gas, Heat, Light & Power Company Limited, the Imperial Oil Limited, Royalite Oil Company Limited, James E. Barber, The Barber Engineering Company Limited, Alberta Petroleum Association, Petroleum and Natural Gas Conservation Board, D. P. McDonald, Home Oil Company Limited, Anglo-Canadian Oil Company Limited, and I ascertained that the Standard Chemical Company Limited might be interested so I took it on myself to send a notice to them. Mr. Egbert is here, apparently pursuant to this notice.

As you, Sir, have stated, during the course of the main Gas Hearing, the matter of plant vapours was mentioned on one or two occasions, and there

not to proceed with the hearing this morning. He was called to Ottawa. I, of course, am going to accede to his request. It would be improper if I did not. But we might be able to go some little distance today without involving Mr. Steer's position or prejudice him at all in the slightest degree. It might perhaps be well, Mr. Chambers, if you were to outline your application and then, if the others present have anything to say, either with respect to yours or to some alternative, then it will go on the record today and everyone will know what we have done, and we can perhaps be ready to go on with the actual application at a fairly early date.

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As you, Sir, have [illegible] posted the notice of the [illegible] Gas Royalties, the matter of plant vesture was mentioned on one of two occasions, and there

have been some discussions since then. My clients, The Madison Company, has been giving some technical study and experimentation as to the feasibility of recompressing the plant vapours and putting them through the scrubbing plant for the purposes of storing or sending to the dry gas market the residue. There have also been parties interested in the possible use of those vapours for manufacturing propane and other similar substances, and as Madison takes charge of the gas at the well head under an arrangement whereby it is processed for the extraction of gasoline, and has the right to make arrangements for further extraction, if the absorption plants do not want to use it; and as Royalite, as an absorption plant operator, was not interested in further treating the plant vapours, Royalite deemed it advisable, sir, to bring the matter before you for final disposition and as it itself is not in the business of extracting further products from these plant vapours, it is my suggestion, purely for the purposes of bringing it to a head, that it might be taken, recompressed and taken through the scrubbing plant.

I should make it clear that Madison, while it is making the application, is not pressing that that is the only or the best method to be used. The Madison Company has made some study in connection with the matter and it has the facts and figures which would be involved if the Board did desire to have the plant vapours recompressed and sent to the scrubbing plant. Now I do not think there is much further that I can do at this time except to say this, Mr. Stevens-Guille has prepared a brief outlining the details of the scheme if they were to be recompressed and go to the scrubbing plant. I would suggest, sir, that it might

be well that he should be sworn and read that for distribution now, which would be like his examination in chief, and then they can be distributed to everybody and he can be cross-examined and dealt with at a later date.

THE CHAIRMAN: I think that is a very proper suggestion, Mr. Chambers. You might follow it out and all cross-examination will be deferred. Does that suit you, Mr. Brownie?

MR.BROWNIE: I agree that is good practice, sir.

MR.CHAMBERS: I will call Mr. Stevens-Guille.

THE CHAIRMAN: Perhaps before you start another thing I should mention something on which I would like the help of Counsel engaged. Have I the power under the Act to deal with these plant vapours in any shape, form or fashion? Have I the power in particular to order that they be recompressed and delivered to Calgary or have I the alternative power in equal degree to order Madison to sell to some other person who is willing to buy them? And thirdly, have I any jurisdiction at all over the price to be paid for the plant vapours? I do not want you to deal with it now, Mr. Chambers, but I merely mention it so that counsel will have these things before them that are in my mind. There may be others but these are the ones I think of at the moment.

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AFFIDAVIT OF SERVICE NOW
MARKED EXHIBIT 1.

HENRY LeMARCHAND STEVENS GUILLE,

having been duly sworn, examined by Mr. Chambers, testified as follows:-

Q Mr. Stevens Guille, you are the President and Manager of the Madison Natural Gas Company Limited?

A That is correct, Mr.Chambers.

Q And you are familiar with and have given some thought to the matter of dealing with plant vapours?

A Over a considerable number of years.

Q And have prepared a brief in connection with that matter?

A Yes, I have got a brief here entitled Report M-17.

DOCUMENT IN QUESTION IS NOW MARKED EXHIBIT 2.

Q Will you read that, Mr. Stevens Guille, and make any explanations you see fit to make as you go along, please?

A Exhibit 2, Report M-17, is entitled "Conservation of Royalite Gasoline Plant No. 1 Vapours by Recompression." There is an Index at the start and then turning to Page 1:-

Introduction

In the process of extracting natural gasoline from the wet natural gas by the oil absorption process, a certain proportion of the lighter hydrocarbons are extracted simultaneously with the heavier hydrocarbons which compose the natural gasoline. These lighter hydrocarbons, commonly referred to as "plant vapours", are separated from the heavier hydrocarbons forming the natural gasoline at later stages in the process.

The vapours from Royalite Gasoline Plant No. 1 are contaminated with a large quantity of sulphur compounds, mainly hydrogen sulphide and mercaptans. In the past a trial

was made of utilizing these vapours as fuel under the boilers, but it was found that the sulphur compounds caused corrosion, making this use uneconomical. At the present time the vapours are flared.

Consideration has been given from time to time to conserving these vapours and recently two possible methods have been under consideration. By scrubbing with the Girbotol process it would be possible to reduce the sulphur compound content sufficiently to use the vapours as fuel under the boilers without causing corrosion. The vapours, however, leave the plant at a pressure of only 60 to 70 psig. - that is pounds per square inch gauge - therefore a special scrubber operating at less than this pressure would have to be installed, together with suitably sized piping to deliver the vapours to the boiler house, which would require an appreciable investment. Furthermore, the consumption of fuel under the boilers during summer months would only amount to some 50% of the volume of the vapours, consequently this method would not achieve full conservation.

An alternative method of conservation would be to recompress the vapours, mix them with the residue gas, scrub the mixture in the present Girbotol unit and deliver the purified mixture to the fuel market. The feasibility of this method depends on the ability of the Girbotol process to remove not only the hydrogen sulphide but also the mercaptans from the mixture. Sufficient information was not available on the Girbotol process to determine whether or not this method could be successfully applied, therefore early in the present year experimental work was undertaken by Madison to determine

the efficiency of extraction of mercaptans by the monoethanolamine solution used in the Girbotol process. The information gained indicated that the existing Girbotol unit could scrub the mixture of plant vapours to meet market requirements.

Just a word there. I should have said a mixture of plant vapours and residue gas to meet market requirements.

The question of suitable material for the compressor cylinder and fittings in order to handle the vapours with their hydrogen sulphide content of some 4,000 grains per hundred cubic feet was then gone into and alloys satisfactory for this purpose selected and quotations obtained from the manufacturers. With the technical problems solved the layout of the suction and discharge lines and location of the compressor were proceeded with and early this summer the Natural Gas Utilities Board was advised verbally that this method of conserving the plant vapours was feasible. On September 27th Madison made an application to the Board for a direction to erect and instal the necessary equipment, and for the inclusion of the cost of the capital additions in their rate base. This application is the reason for the present hearing for which this submission has been prepared.

Now the rest of the Report, Mr. Chairman, covers certain details of vapour volume, composition, pressures and other pertinent facts. It may not be complete for everybody's purposes but if other parties wish for their submissions to obtain further data from us, we will be very pleased to supply it. We put down here what we thought might be of use as a preliminary base.

MR.EGBERT: I do not see anything in here, sir,

about costs.

THE CHAIRMAN: Yes, there is something.

A I will come to it in just one minute, if you look in the Appendix it has got the full costs shown.

Turning then to the submission, Page 4.

Vapour Volume, Composition and Pressures.

Estimates, based on measurements made from operating data indicate that the following vapour volumes are available while the Royalite Gasoline Plant No. 1 extracts an isobutane plus product:

Q MR. CHAMBERS: Would you pause there for a moment? Explain now what you mean by isobutane plus product?

A Prior to 1943 the product manufactured by the Royalite Gasoline Plant No. 1 was a standard specification based on Read Vapour pressure, which is the regular method of testing Natural gasoline, and of speaking of it for sale to the market. During the recent war, however, the need arose for the extraction of another hydrocarbon, a lighter one, isobutane for raw feed to the alkylation plant, as it is called, which was at that time being erected in the Imperial Oil Refinery in Calgary, to produce a component for manufacturing high octane aviation fuel for war purposes. Therefore the product manufactured by the Royalite Gasoline Plant was changed in specification to include the extraction of isobutane and from that day to this a product which has a natural gasoline base plus isobutane and also some excess normal butane has been shipped to the refinery.

Q That is the point I want to get clear. As I understand it, with the termination of the war they have not gone back to

the pre-war specifications?

A That is correct. Mr. Chambers, perhaps I can go further on that and say that, based on my information, the position has not been stabilized finally yet. The plant is being operated but it is being operated without final settlement between the Imperial Oil and the Allied War Supplies Corporation on the war time contract. The outlook at the present time is that that plant will be operated.

Q With the result that they continue with the isobutane product?

A With the result that the isobutane product will be continued.

Q So far as your information at the moment is concerned, the probabilities are that they will continue with the manufacture of the product that they presently turn out?

A That is right.

Q THE CHAIRMAN: Is this what you call the 46 pound product?

A That is also spoken of as the 46 pound product. But the better term, I think,myself is to say isobutane plus product, because it describes it more specifically.

Now again turning to the submission. We have shown here the approximate yearly totals available, and before putting on the figures in the record I would like to point out that the volume there is from day to day, both with the quantity of the vapours being processed in the plant and also with the season of the year, which controls the temperature of the cooling water available. Now reading from the submission:

	Yearly Total Mcf.		%
Refractionator Vapours	137,000		14
Reabsorber Vapours	831,000		86
Total:	968,000	(1)	100

That makes the refractionator Vapours 14% of the total and the Reabsorber Vapours 86%.

Q THE CHAIRMAN: What percent is that of the 15% that you actually take out of the well head gas? It is part of the 15%, let me put it that way?

A Well actually the 15% I think would include the residue gas that we are returning as fuel to the drilling wells. The volume of vapour plus liquid hydrocarbons, that is to say the isobutane plus product on final specifications amount to, at the present time, to around 12% of the total. I think Mr. Stevens.....

Q MR.CHAMBERS: That is exclusive of the return drilling fuel?

A That is exclusive of the return drilling fuel and with the return drilling fuel brings it to say 15 to 17%, according to the demand. There is a footnote, you will notice, and we will follow that back in a moment. Now reading again:

The daily average of the vapour volume under this condition will vary from 2,500 Mcf. to 3,000 Mcf., depending on the volume of wet gas being processed and the cooling water temperatures.

Should the Royalite Gasoline Plant revert to making a 26 R.V.P. - R.V.P. is Read Vapour Pressure - product the average daily volume will decrease to from

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1,700 Mcf. to 1,900 Mcf. with the total yearly volume reduced accordingly.

Now turning to Page 5 we will follow the footnote on Page 4, on that page.

Composition

Average analyses of the vapours while making isobutane plus product are given below in mol percent.

MR.CHAMBERS: What is "mol"?

A That is molecular volume per cent. Now down in the column we have given the hydrocarbons, methane, ethane, propane, isobutane, normal butane, hydrogen sulphide and carbon dioxide. Those will be copied in:

	Refractionator Vapours	Reabsorber Vapours	Combined Stream.
Methane	2.7	45.5	39.4
Ethane	14.2	25.1	23.6
Propane	77.1	16.5	25.1 (1)
Iso-Butane	0.2	0.5	0.5
N-Butane	-	0.5	0.4
Hydrogen Sulphide	4.9	7.0	6.7
Carbon Dioxide	0.9	4.9	4.3
	100.0	100.0	100.0
(1) Propane (Bottled Gas) available, Bbls/Year	67,680	87,870	155.550

Now you will notice in the third column there is a footnote (1) now appearing against the 25.1% content of propane. That is placed there to give, combined with the (1) on the page before against the total of 968,000 Mcf.per year, or the combined streams. The quantity of propane that would be available for use as bottled gas if it was separated and purified.

Q THE CHAIRMAN: "ould it be very much trouble for

you to tell me your arithmetic process of getting your weighted average? I find in the other hearing that I have run across difficulties, that I find I have not the foggiest idea of what they mean and an explanation might help. It might be of no value to me. It is the weighted average and I wondered what your process was?

A We left the details of mathematics out on purpose to simplify it, Mr.Chairman.

Q You can merely explain the process. You have a weighting factor?

A That is quite easily explained. Each of these refractionatory vapours and reabsorber vapours, we have the individual quantity vapours and it is extended from the first column into the second column and then combine them in the final column, for example, if you have 10% of 100,000 cubic feet per day, Mcf. per day for the refractionatory vapours.....

Q I have got it.

A .....you can extend that out into the total stream and the same with the reabsorber vapours.

Q I have got it. Thank you very much.

A We can, as I say, Mr. Chairman, supply any of that information to any parties if they wish it for preparing their submissions.

Reading again at the bottom of Page 5:

<u>Pressure Available</u>

The vapours leaving the refractionator are discharged at 150 psig. but the vapours leaving the reabsorber are available at only 64 psig. The suction pressure available at the compressor will therefore be 64 psig. less the pressure

drop in the suction line.

Proposed Recompressor Installation.

Location of a compressor in the vicinity of Royalite Gasoline Plant No. 1 has several objections; firstly the hazard of igniting natural gas or vapours in the case of a line break, and secondly the added expense of operating and supervising a single unit. The logical location for a compressor would therefore be in the Madison Compressor Station No. 1. By utilizing one cylinder out of the two now fitted to one of the GMV-6 compressor units, sufficient capacity can be obtained to handle the full quantity of vapours except on peak volume days; the other cylinder of the unit would continue to pump wet gas. The running time on these units now approaches 98%, therefore it would be more economical to flare the gas during the shut down periods for mechanical maintenance than to instal a standby unit.

Locating the vapour recompression unit in Compressor Station No. 1 would necessitate laying a suction line from the Royalite Gasoline Plant No. 1 to that station and a discharge line from the station to the Scrubbing Plant. These line sizes have been calculated as follows:-

	Size Inches	Length Feet
Suction Line	6	940
Discharge Line	4	420

The compressor cylinder presently installed for wet gas boosting could be used for recompressing the plant vapours by replacing the liner, piston and valves, etc., by ones of Ni-resist and stainless steel construction.

The reason, of course, for the special materials for

the liner and valves and other fittings is the presence in the vapours of that 4,000 grains per 100 cubic feet of hydrogen sulphide which can be very corrosive under such conditions. Reading again at Page 7:-

The pressure drop in the suction line has been estimated at 6 psig. giving a suction pressure at the unit of 64 less 6, or 58 psig. A discharge pressure of 325 psig. must be maintained to deliver the vapours to the scrubbers.

The average temperatures of the gas to and from the compressor are estimated as follows:-

	°F.
Suction	65
Discharge	255

After coolers will not be required as the temperature of the mixed gases will not be high enough to affect the scrubbing efficiency of the Girbotol unit. Under these conditions the estimated capacity of the one cylinder is 2,650 Mcf. at 14.4 psia. and 60° F. per day.

Q MR. CHAMBERS: What is "psia."?

A That is in contrast to the psig., which is pounds per square inch gauge. Psia. is the pounds per square inch atmospheric pressure, which is an important point when we are dealing with capacities of compressors.

The calculated maxim capacity of the one compressor cylinder to be converted is not great enough to handle the vapours indicated as being available at all times. This is not as serious as appears on paper because in practical operation a small flare should be maintained at all times as a safety measure. If a pilot flare is not maintained, a shut-down of the compressor would result in a volume of

highly toxic gas being vented to the atmosphere before the gas stream could be lit.

The plan attached in Appendix 1 showing Compressor Station No. 1, the Scrubbing Plant and Royalite Gasoline Plant No. 1 indicates the location of the equipment and the lines.

We turn to Appendix 1 and just briefly look at that. On the map in grey is shown the outline of the plants I mentioned, the Gasoline Plant, down towards the bottom of centre with a red line leaving it and travelling up the plan to the Compressor Plant No. 1, and shown going into the end compressor. That red line that I have just mentioned is the proposed suction line. From that compressor station another red line has been drawn coming back parallel to the first one going over to join into the line running from the Gasoline Plant to the Scrubber. These lines carry residue gas so that vapours would be mixed ahead of the Scrubber with the residue gas, and the mixture then enters the scrubber to be purified in the Girbotol unit.

The cost of the alterations and additions is estimated to total $14,000.00 as shown in detail in the breakdown in Appendix 2.

There are the cost figures, Mr.Egbert. I do not think, Mr. Chairman, there is any point in my reading from that. It is all set out clearly against each general item, what the material and labour costs are estimated at, and it is brought to the total of $14,000.00.

Q MR.CHAMBERS: Any overhead?

A No, we have shown no overhead in that. It is the straight cost and the work to be done entirely by our organization.

Q THE CHAIRMAN: You have included 10% for contingencies?

A In this case we have not, because this is a small job and we are familiar with the detailed costs, which, of course, are predicated on present prices.

Present compressor liner, piston, rod packing, etc., removed from the unit when the corresponding special items are installed, valued at $1,000.00, can be stored and used as replacements on the wet gas booster units.

Q MR.CHAMBERS: That would make it net $13,000.00?

A Yes, the $1,000.00, of course, would be carried for a certain period of time depending on how soon the need for these particular items came up.

Q THE CHAIRMAN: It would go to inventory in the meantime?

A It would go to Warehouse inventory in the meantime.

Completion of the project would not be possible before June 1947 because laying the lines through the yard and connecting them into the plants cannot be carried out while operating under the high loads of winter. This, however, is unlikely to delay the project as it is unlikely that materials could be obtained earlier than next spring under existing conditions of supply.

Effect on Storage of Residue Gas Excess to Market Requirements.

The only method of estimating the volume of residue gas in excess of market requirements, and hence to be stored, is by deducting the estimated market requirements from the estimated volume of residue gas from crude oil wells that will be available in both the Madison, B.A. and G.O.R. areas; therefore, the accuracy is dependent on the correctness of

these estimates. As the volume to be stored is relatively small compared with the other two volumes, small errors in the larger volumes can give rise to large errors in the smaller volume. The problem of determining the appropriate size of the compressor installation and input lines for storing the excess residue gas in the limestone formation is therefore one of unusual difficulty.

A review of the volumes to be stored, in comparison with the present installed input compressor capacity, indicates that a total of 194,100 Mcf. would be flared in 1947 if the vapours were to be recompressed as against a total of 18,600 Mcf. if the vapours are not recompressed. In 1948 a total of 118,300 Mcf. would be flared if the vapours were to be recompressed, but there would no gas flared if the vapours were not recompressed. From 1949 onwards present indications are that there will be no gas flared, even if the vapours were to be recompressed.

We might just turn to Table 1 where we have set out the estimates in detail, in totals, for each of the years 1947 to 1950 inclusive. Now back to Page 9:

A study of the input wells and decline in their input capacity due to rise in formation pressure, however, indicates that, whether or not the vapours are recompressed, it will be necessary to connect in more input wells for the 1948 operations. Preliminary plans are to lay an input line to Royalite Wells No. 7, 8 and 18 and this addition to the input system would be sufficient to take care also of the increased input volumes available, if the vapours were to be recompressed.

Effect on Conservation of Gas

Due to the compressor being unable to handle any gas in excess of 2,650 Mcf. per day without overloading the unit, it is estimated that, allowing for such periods when the vapours available exceed the compressor capacity, approximately a total of 40,000 Mcf. or 4% of the vapours available will be flared each year.

The quantity of gas that will be flared as beyond the capacity of the input compressors, if the plant vapours are recompressed, can be arrived at by deducting the figures in Column 5 from Column 6 in Table 1. Adding the net total so obtained to the figure of 40,000 Mcf. mentioned above, gives the total volume of gas that will be flared at both plants if the plant vapours are recompressed. The net benefit from the conservation point of view can then be determined by deducting the total figure of gas flared, thus derived, from the total of the volume of vapours available. The results have been tabulated below for the period 1947 to 1950 inclusive.

I just stress there that there are two points at which we anticipate there would be some gas flared due to peak load volumes being in excess of unit capacity, one point being plant vapours in excess of the suggested recompressor for plant vapours, and the other where there is gas in excess of the market requirements and also in excess of the capacity of the compressor to return it to the formation for storage. In all cases here we have assumed that the storage project in Bow Island would be in operation with a daily capacity of 4,300 Mcf. as we have noted on the top of Table 1.

Year	Vapours Available Mcf.	Vapours Flared Mcf.	Vapours Conserved Mcf.	%
1947	968,000	215,500	752,500	78.0
1948	968,000	158,300	809,700	84.0
1949	968,000	-	928,000	96.0
1950	968,000	-	928,000	96.0

It is to be noted that all tables and estimates have been carried forward only to and including the year 1950. The reason is that, from 1950 onwards, estimates indicate that there will be no days in summer when the volume of residue gas from connected crude oil wells in excess of market requirements will be above the input compressor capacity. As already stated above, there will still be however certain days when the vapour volume will be in excess of the recompressor capacity, as long as the volume of wet gas processed and the specification of product extracted remain substantially as at present. The excess balance of vapours would therefore be flared.

I would like to add to that, Mr. Chairman, what Mr. Chambers pointed out at the start, that we have made this study in the ordinary course or carrying on what we understand is our function and we are submitting it for consideration and we are in no way wishing to press it in opposition to any other scheme that may be presented to you, Sir, and which from an over-all point of view you might feel was of greater benefit to the problem as a whole.

Q MR.CHAMBERS: Mr. Stevens Guille, am I right in this that if these plant vapours are recompressed, they would go direct to the market day by day?

A Yes.

Q With the result that there would be more gas to be repressured

in the summer months?

A That is correct, or conserved in the winter months.

Q That is the point I am coming to. There would be more conserved gas and when we say conserved gas we mean, if Royalite's submission in the other hearing were adopted, there would be more gas to be bought at the discounted price?

A That is right.

Q For the next few years?

A That is right. They would replace the withdrawals from the gas cap to meet winter market requirements.

Q THE CHAIRMAN: How would it affect your market sharing position if this scheme should be adopted?

A The volume of the vapours that was actually recompressed and delivered to the scrubbing plant would be taken into the market sharing position.

Q And your available gas would be increased by that amount?

A Yes.

Q And your proportion in the market would thereby be increased?

A That is correct.

Q MR.COOTE: One question on Table 1, Mr. Stevens Guille with reference to the bottom of Column 1. Column 1 from C.W.N. I wondered if Column 1 and Column 2 were interchanged there?

A You mean with reference to the footnote?

Q Yes?

A Yes, I think so.

Q MR.CHAMBERS: Column 2 is from the Canadian Western?

A That is right.

Q And Column 1 is the Madison Report?

A That is right.

Q THE CHAIRMAN: Let me get that clear?

A We have these references interchanged.

Q Oh yes, I see. Column 2 instead of Column 1.

A Conclusion.

In view of the overall conservation of gas in Turner Valley that would be affected by the above scheme, it is submitted for study by the Board.

(Then follows plan showing the proposed suction and Discharge lines for recompressing Royalite Gasoline Plant No. 1 vapours at compressor station No. 1, showing the proposed lines in red.)

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APPENDIX 2.

EQUIPMENT FOR RECOMPRESSING ROYALITE GASOLINE PLANT NO. 1 VAPOURS

1. Lay Vapour Suction Line from Gasoline Plant to Compressor and Discharge Line from Compressor to Scrubbing Plant

Labour	$ 2,270.00	
Material: 940' - 6" Suction Line	1,290.00	
420' - 4" Discharge Line	330.00	
Meter and Fittings	300.00	
5 - 6" Ser. 15 and 2 - 4" Ser. 30 Gate Valves	1,450.00	
Material (Sundry)	1,220.00	
Forge and Machine Shop	550.00	
Transportation	190.00	$ 7,600.00

2. Purchase and Instal Inlet Separator Drip.

Labour	$ 50.00	
Material - Separator	1,100.00	
Cement and Lumber	20.00	
Sundry	140.00	
Forge and Machine Shop	-	
Transportation	20.00.	1,330.00

3. Fabricate and Instal Suction and Discharge Headers.

Labour	$ 300.00	
Material - 8" Merco Valve	420.00	
2 - 10" Hamer Line Blinds	600.00	
Sundry flanges, valves, pop valve, etc.	1,300.00	
Forge and Machine Shop	250.00	2,870.00

4. Purchase Ni-resist Liner for Cylinder
Ni-resist Piston
Ni-resist Rings
Special Rod Packing — $ 1,900.00 — 1,900.00

5. Cleaning up and Repair, Cementing Floor, Painting, etc. — $ 300.00 — 300.00

TOTAL: $14,000.00

TABLE 1.

Estimated Volumes (Mcf.) to be Stored in Royalite Gas Cap and Flared.

Years 1947 to 1950 Inclusive

Bow Island Storage Project assumed to be in operation with Daily Capacity of 4,300 Mcf.

	(1)	(2)	(3)	(4)	(5)	(6)
			Excess Crude Oil Gas to be stored in Turner Valley		Flared As in Excess of Input Compressor Capacity	
Year	Crude Oil Gas Available	C.W.N. Fuel Gas Requirements	Vapours Not Recompressed	Vapours Recompressed	Vapours Not Recompressed	Vapours Recompressed
1947	16,133,000	14,348,000	2,531,200	2,929.900	18,600	194,100
1948	15,048,950	13,128,000	2,513,950	3,066.080	-	118,300
1949	13,249,500	13,128,000	1,899,000	2,376,130	-	-
1950	12,410,000	13,128,000	1,443.900	1,915,030	-	-
TOTAL:		53,732,000	8,388,050	10,287,140	18,600	312,400

Column 1 - From C.W.N. Estimates (Data of May 9th, 1946), File 791.0211

Column 2 - Madison Report M-5946, File 543.1

Column 3, 4, 5, 6 - Madison Report M-6246, File 920.211

TABLE 2.

RECOMPRESSION OF R.O.C. GASOLINE PLANT VAPOURS

Estimated Gas Cap Withdrawals - Mcf.

Year	If R.O.C. Vapours Not Recompressed	If R.O.C. Vapours Recompressed	Gas Cap Gas Conserved
1947	971,900	573,390	398,510
1948	653,870	335,490	318,380
1949	1,279,800	844,400	435,400
1950	1,731,600	1,215,800	515,800
TOTAL:	4,637,170	2,969,080	1,668,090

Data from Report M-6246.

Now we are going to defer all cross-examination until a later date. In the meantime Counsel and others will have an opportunity to study this and perhaps the cross-examination will be all the better because of the delay.

MR. CHAMBERS: I understand Mr. Barber has a submission.

THE CHAIRMAN: I was going to ask if there are any other submissions, Mr. Chambers.

THE WITNESS: Might I make one suggestion before I leave that, to save time. We will be very glad to check with anybody the figures they wish to use in any submission so that we are able to agree or disagree with them and when it comes to cross-examination we do not spend any time discussing statistics in the Hearing.

THE CHAIRMAN: Some suggestion along those lines might have cut the 91 days down to 50 days.

A That was in my mind.

THE CHAIRMAN: Have you any submission, Mr. McDonald, at the moment?

MR. McDonald: No sir. I think the Producers' position is this, that this is a commodity that is available for sale and we wish to sell all commodities we can sell, and we are very much interested in hearing the alternative proposals that may be made.

THE CHAIRMAN: You will keep in mind my question as to my power to fix price?

MR. McDONALD: Yes sir. We will have a submission along that line.

THE CHAIRMAN: My own view is that I have no such power.

MR. McDONALD: Yes. I will submit a brief and argument in regard to that point.

THE CHAIRMAN: Mr. Egbert, have you anything to submit at the moment?

MR. EGBERT: All I have to say, Sir, is that my client is interested in the acquisition of these vapours for the purpose of manufacturing methanol and formaldehyde. At the moment it is not in a position to make any definite proposal because it has not this information before it.

MR. CHAMBERS: What is methanol?

MR. EGBERT: Search me.

THE CHAIRMAN: I would say that you get it from methane.

MR. McDONALD: And the other product?

MR. EGBERT: Formaldehyde.

THE CHAIRMAN: And you, Mr. Brownie, will await Mr. Steer's return?

MR. BROWNIE: Yes sir.

THE CHAIRMAN: Mr. Barber?

MR. BARBER: We have an application which we would like to file, Mr. Chairman. It will be subject to later revision.

THE CHAIRMAN: How many copies have you, Mr. Barber?

MR. BARBER: I have one.

THE CHAIRMAN: I think perhaps you might as well go in the witness box and read it into the record.

MR. McDONALD: Yes.

MR. BARBER: All right, sir.

THE CHAIRMAN: Did I hear you say it might be

subject to further revision?

MR.BARBER: It could be subject to revision, yes sir.

JAMES ERNEST BARBER, having been duly sworn, testified as follows:-

IN THE MATTER OF THE NATURAL GAS UTILITIES ACT, and

IN THE MATTER OF MADISON NATURAL GAS COMPANY LIMITED, and

IN THE MATTER OF PLANT VAPOURS.

APPLICATION

TO: The Natural Gas Utilities Board,
Edmonton, Alberta.

Application is hereby made to the Natural Gas Utilities Board on behalf of James E. Barber (hereinafter called the "Applicant") for permission to purchase from their owners the streams of plant vapours which come from the tops of the refractionator and reabsorber in the No. 1 plant of the Royalite Oil Company Limited, situated in the town of Turner Valley and to divert these streams to the plant to be installed by the Applicant for the purpose of extracting therefrom the constituent parts of the streams which are necessary to the Applicant, and which are known as propane and ethane.

It is the purpose of the Applicant to construct and instal a plant in the vicinity of the Royalite No. 1 Gasoline Plant which will have for its principal business the extraction of propane and ethane and their use for distri-

bution as fuel and for conversion by means of cracking into ethylene oxide and the further conversion of ethylene oxide into numerous end products.

These vapours are at present being burned in the vicinity of the Royalite Gasoline Plant No. 1 for the reason that their constitution is such that they cannot be satisfactorily used as fuel for power uses. The Applicant has found a means by which it is technically and economically possible to convert approximately fifty per cent of the combined streams of vapour into products of value, and he maintains that it is in the interest of conservation to so process the streams that maximum use is made of the constituent parts which are valuable. The Applicant further proposes to compress the unused remainder of the streams to a pressure which will make it available for return to the Madison Natural Gas Company, Limited for further handling as the Natural Gas Utilities Board may direct, and as the Madison Natural Gas Company, Limited may be able to do.

The Applicant intends to take delivery of the streams at some point within or adjacent to the property of the Royalite Oil Company Limited which may be agreed upon by all concerned, and to make delivery of the unused remainder of the streams at a point similarly located and agreed upon.

The Applicant, therefore, makes application for direction or an order from the Natural Gas Utilities Board that he be allowed to divert these vapours to his use and to return to the Madison Natural Gas Company Limited,

the unused remainder of the streams for final disposal by them.

DATED at the City of Calgary, in the Province of Alberta, this 12th day of October, A.D. 1946.

"James E. Barber"

James E. Barber

Barber Engineering & Supply Co. Ltd., in behalf of James E. Barber. Their addresses for the purpose of these proceedings is 210 Toole-Peet Bldg., Calgary, Alberta.

DOCUMENT IN QUESTION IS NOW MARKED EXHIBIT 3.

THE CHAIRMAN: Cross-examination on this will be deferred until a date which we will arrange today, I hope.

A All right, sir.

THE CHAIRMAN: Mr. Coote, there is a flare at your plant too, is there not?

MR. COOTE: That is right, sir.

THE CHAIRMAN: How large is it compared with the Royalite flare?

MR. COOTE: Roughly speaking it would be about one-fifth the size.

THE CHAIRMAN: Might it not be economical to try to put it back into the Calgary stream?

MR. COOTE: I doubt that. We have not gone into that in detail as yet.

THE CHAIRMAN: Are there any suggestions as to the date on which we may resume? There are one or two things to be thought of. One of them is the Court Reporters, who

at the beginning of November are going to be extremely busy until the beginning of December. Do you think you are going to take very long?

MR. CHAMBERS: I do not think so if the parties will distribute their briefs.

THE CHAIRMAN: Yes. I think, Mr. Barber, you will require to go into a great deal more detail than you have done in your first submission. I think you possibly will require to satisfy me - although I am not going to ask you to do it at this Hearing, because I do not think it is anyone's business but mine - as to the nature or extent of your finances. I do not think it is anyone's business but mine on that point. So that you will not be called upon to demonstrate your financial ability to the whole City of Calgary. But I think you will have to give us much more engineering detail as to costs than you have given us now.

MR.BARBER: We are entirely willing to do that, Mr.Chairman.

THE CHAIRMAN: And when do you think you can be ready, in two weeks or three weeks?

MR.BARBER: Two weeks will be satisfactory to us.

THE CHAIRMAN: What about you, Mr.Egbert? Perhaps you will require to get instructions?

MR.EGBERT: Yes. I was also wondering about Mr. Steer, who will be back onthe 21st, and is pretty well tied up for the succeeding two weeks in Appeal Court.

THE CHAIRMAN: What we may be required to do is this, you are all members of the Bar in Calgary, and I presume, Mr. Barber, you will be having Counsel before you are through?

MR.BARBER: Yes.

THE CHAIRMAN: You had better arrange amongst yourselves with the Court Reporters for a date, which will be suitable for all of you, and of course you will require to consult Mr. Steer as well, and then let me know. I have a week here that I know I will be away for three or perhaps four days. Apart from that I do not propose to undertake any Hearings of any description or kind whatsoever. I want to concentrate on my 91 volumes and 196 exhibits. So that apart from those few days, if you Gentlemen arrange amongst yourselves, Mr. Steer and the Court Reporters, I will be available when you let me know the date that you have arranged. A place to sit, of course, is also necessary, and you will have to consult Mr. Charman, the Sheriff.

Is there anything else before we adjourn? We will adjourn until a date to be arranged.

(The Hearing accordingly was adjourned).

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